

**STRATEGY  
RESEARCH  
PROJECT**

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

**OUTSOURCING WHOLESALE LOGISTICS,  
A MODEL FOR FUTURE SYSTEMS**

**BY**

**LIEUTENANT COLONEL LLOYD McDANIELS  
United States Army**

**DISTRIBUTION STATEMENT A:**  
Approved for Public Release.  
Distribution is Unlimited.



**USAWC CLASS OF 2002**

**U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050**

**20020806 290**

USAWC STRATEGY RESEARCH PROJECT

**OUTSOURCING WHOLESALE LOGISTICS, A MODEL FOR FUTURE SYSTEMS**

by

LTC Lloyd McDaniels  
U.S. Army

CDR Robert O. Kedney  
Project Advisor

The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.

U.S. Army War College  
CARLISLE BARRACKS, PENNSYLVANIA 17013

**DISTRIBUTION STATEMENT A:**

Approved for public release.  
Distribution is unlimited.



## ABSTRACT

AUTHOR: LTC Lloyd McDaniels

TITLE: Outsourcing Wholesale Logistics, A Model for Future Systems

FORMAT: Strategy Research Project

DATE: 09 April 2002 PAGES: 34 CLASSIFICATION: Unclassified

This essay outlines and discusses the merits of contracting wholesale logistics for Army weapon systems. The Army has acknowledged that between sixty to eighty percent of the lifecycle costs of a weapon system results from the Operations and Support costs associated with the system. This paper outlines the method to reduce those costs by providing incentives to simultaneously increase operational readiness and reduce logistics requirements of the system at both the wholesale and retail levels. In addition the concept provides the Army a viable industrial base and naturally re-capitalizes the weapon system.

The essay looks at two systems, that have begun to incorporate this concept into their lifecycle support plans. The systems, ITAS and Sentinel represent a cross-section of weapon system functions. Their functions include direct fire command and control and sensing, respectively.



## TABLE OF CONTENTS

ABSTRACT .....	III
PREFACE.....	VII
LIST OF ILLUSTRATIONS.....	IX
OUTSOURCING WHOLESALE LOGISTICS, A MODEL FOR FUTURE SYSTEMS.....	1
BUDGET TRAIN WRECK AND TRANSFORMATION .....	1
SYSTEM LIFE CYCLE COST AND RESPONSIBILITY .....	2
COST REDUCTION VERSUS SYSTEM IMPROVEMENTS .....	3
PAST LOGISTIC REFORMS.....	4
THE BASIC PROBLEM.....	6
COSTS AND PROFIT OF NORMAL SUPPLY PROCUREMENTS .....	7
CONTRACTED READINESS .....	7
FUNDING PROCESSES .....	10
INTEGRATING CONTRACTED READINESS WITH UNITS .....	11
INDUSTRIAL BASE .....	12
MEETING THE DOD VISION .....	14
IMPLEMENTATION IN TWO PROGRAMS .....	15
CONCLUSION.....	17
ENDNOTES .....	19
BIBLIOGRAPHY.....	23



## PREFACE

This project as well of the rest of my career would not be possible without the love and support of my family. I have also been fortunate for the guidance and support of Commander Robert O. Kedney (ROK) as my Project Advisory. Finally, without the superb support of the CCAWS and Sentinel Product Offices, I would have been unable to write this thesis, nor have the data to support my claims.



## LIST OF ILLUSTRATIONS

FIGURE 1 CONTRACTOR PROFIT ON QUANTITY BUYS.....	7
FIGURE 2 CONTRACTOR READINESS CONCEPTS .....	8
FIGURE 3 CONTRACT METHOD AND PAY FOR CONTRACTOR READINESS .....	9
FIGURE 4 REQUISITIONS AND SUPPLY FLOW OF CONTRACTED READINESS.....	12
FIGURE 5 . CDS VERSUS BASE CASE (STANDARD DOD LOGISTIC PRACTICES) PROGRAM.....	16

**X**

## **OUTSOURCING WHOLESALE LOGISTICS, A MODEL FOR FUTURE SYSTEMS**

During the past several years the Department of Defense (DoD) and the Army have initiated many programs designed to make the costs of maintaining and sustaining the current systems and future systems affordable. The methods have included efforts to make systems more reliable and therefore less expensive. These initiatives have encountered much competition for funding as the current needs compete with the investment needs to fund the increased reliability. The DoD also initiated many efforts to improve the logistical capacity while simultaneously reducing the costs. The DoD borrowed extensively from the private sector for innovative and inexpensive concepts to improve its logistics capability. Most notable were the re-inventing government initiatives sponsored by Vice President Gore that resulted in a reduction of order ship times by fifty percent.<sup>1</sup>

## **BUDGET TRAIN WRECK AND TRANSFORMATION**

Daniel Goure and Jeffery Ranney show conclusively that the DoD has a significant budget problem and is headed for a crisis if action is not taken.<sup>2</sup> They describe the problem as budget train wreck that resulted from the conflict between the cost to sustain the current force and the need to acquire the future force. Goure and Ranney's analysis shows that at least \$100 billion is needed per year through fiscal year 2015.<sup>3</sup> Their conclusion has been slightly mitigated by somewhat larger defense budgets from fiscal year 1998 through 2003, but not near the size needed to avert a budget train wreck.

The budget that Goure and Ranney analyzed only accounted for a linear assumption in modernization<sup>4</sup>. The modernization program they used in their analysis was from the May 1997 Report of the Quadrennial Defense Review (QDR). In this document the DoD describes in great detail the requirement for 23 unique weapon systems.<sup>5</sup> The 1997 QDR goes on further to estimate and provide budgetary guidance to implement detailed weapon systems requirements. These data provided the foundations for Goure and Ranney's analysis. Compared to the Quadrennial Defense Review Report dated September 30, 2001, the DoD provided little detail either on system requirements or funds. Instead it emphasized, "emerging strategic and operational challenges."<sup>6</sup> Then further links strategy and investment through the explanation of six Transformational Initiatives<sup>7</sup> that each service must address in the modernization and transformation of their forces. The changes in the 2001 QDR modernization approach and current world events show that the linear analysis of modernization is no longer valid.

In addition, the budget shortfalls will have a direct affect on the Army's Transformation Plans. The Army's transformation is heavily dependant on new generation of tactical vehicles

that provide nearly the same firepower and protective capabilities of today's systems, but weights fifty to seventy percent less than today's systems. In addition the Army's Chief of Staff, General Shinseki, has challenged the acquisition system to reduce the development time from the historical time period of 10-15 years to a meteoric pace of seven to eight years.<sup>8</sup> These acquisition objectives will provide near-term challenges for Army leaders to balance the sustainment needs of the current force while simultaneously funding a new generation of tactical vehicles for the transformation.

### **SYSTEM LIFE CYCLE COST AND RESPONSIBILITY**

The total life of a system from the time it is first conceived to the time it is demilitarized and removed from the inventory is broken into three major cost accounts.<sup>9</sup> The first account is the research and development account, which funds the initial research, design, and experimentation. This account normally supports approximately 10% of the total system costs.<sup>10</sup>

The second account is procurement accounts. This account pays for all the costs to begin production, produce the system in the quantities required, and initially support the system when it firsts enters the field. This account normally supports approximately 20-30% of the total system costs.

The third account is the operations and support accounts. This account provides the bulk of a system's life cycle costs. This account pays all costs to operate and support the system while it is fielded to the military. Items as diverse as soldiers pay to designing higher reliable parts to procuring the smallest system parts are elements of this account. This account normally supports approximately 60-70% of the total system costs.

Starting in 1996, the Assistant Secretary of the Army (Acquisition, Logistics and Technology) gave responsibility for total ownership cost of a system to the respective product, project managers, or program managers (PM).<sup>11</sup> Inherent in this responsibility is the management and cost reduction of the accounts described above. The concept is that the respective PM can either design highly reliable systems and parts during the first phase of the life cycle and/or make them easy to support, by making parts very accessible and failures quickly and accurately diagnosed. The PM can also affect the crew size and fuel consumption and other support costs through the initial and final design processes. The PM normally has obligation authority over the funds in the first two accounts above, but does not normally have obligation authority for the funds in the third account, the operations and support account. This

disconnects the PM's responsibility and authority and forms a chasm between and official responsible and the majority of the funding.

The essence of the strategy is that the PM will invest in wise engineering trades early, to make the most affordable system, while managing to provide the most capability to the soldier. The problem with this approach is obvious, the PM does not own a crystal ball and is therefore required to make many estimates concerning future use and supportability of the system. These estimates determine the future costs and when shown incorrect, support costs of the system can rise dramatically. The estimates include, but are not limited to, obsolescence rates, system usage rates, environmental conditions, deployment cycles, etc. The PM cannot accurately make the proper trades 3-6 years before these events occur. In fact these trades must be done continuously once a system is fielded, as real data become available. However, the chasm between responsibility and authority ensures a sub-optimization of the process resulting in increased costs and/or reduced readiness rates of fielded systems.

### **COST REDUCTION VERSUS SYSTEM IMPROVEMENTS**

All in the Army force development and acquisition workforce are charged to get the most "bang" for the buck. We want our systems to be the most capable, but we are also charged with being good stewards of the Army and taxpayers dollars. Therefore, the PM continuously looks at the cost of capability and ways that that capability can be procured at an even lower cost. These trades are conducted often during the research and development stage or during production and fielding because the responsibility and funding authority reside with the PM. When the system goes out into the field, the responsibility remains the same (even though in practice it becomes more diffuse) but the funding authority becomes decentralized and varies from the user in the field to various logistic commands in the department of defense to the PM who still gets small amount of dollars to retain the configuration documentation and changes of the system.

The current acquisition system, outlined by the DoD 5000 series and the Federal Acquisition Regulation, and funding mechanisms do not allow for highly flexible methods to adapt to changing technologies and industrial requirements. The funding for engineering changes comes from three primary sources. The funding to provide system improvements comes from the Science and Technology appropriation and specifically comes from the 6.3 and 6.4 accounts within the appropriation. The funding for system configuration changes comes from the procurement accounts for that particular system. Finally, the cost to make parts more

reliable or develop a new part for an out of inventory part comes from the Operations and Maintenance accounts. This is specifically funded through the Army Working Capital Funds.

The stove piping of these funds prevents one manager of the process. Without a single manager the leveraging of funds to both resolve issues of obsolescence or unavailable parts while simultaneously upgrading the capability or enhancing the reliability cannot be accomplished. An example of how this often occurs is in electronics and/or computer changes to our systems. We may have a PM working to upgrade the system configuration by increasing the speed of circuit cards or computers integrated in their system. At the same time we may have others in the technical community writing new code to work on a computer or circuit card version that is no longer supportable and finally, the logistic community may be conducting a life time buyout of the computer or circuit card in anticipation of industry ceasing production of that model. In this example, money is spent on the computer, but the lack of leveraging ensures that it is very inefficient and not supporting the system in the field.

## PAST LOGISTIC REFORMS

The call for reforms of U.S. Army logistic processes goes back as far as the founding of the Army. General Washington, while quartering his forces in Valley Forge said, "All of our departments, all of our operations are at a stand, and unless a system very different from that which has for a long time prevailed be immediately adopted throughout the states, our affairs must soon become desperate beyond the possibility of recovery."<sup>12</sup> Reform, again was called for during the War of 1812, with Secretary of War Calhoun called for the end of use of "...men who are subject to no military responsibility..."<sup>13</sup>, when he referred to the use of unreliable contractors that performed supply and transportation functions.

The logistic system reform during the Civil War was both immense and natural response to the largest mobilization (in relative terms) that the United States has ever undertaken.<sup>14</sup> The logistic response was so complete that the South could simply not compete with a Union Army that both overwhelmed them in force size and resources. The systems of the Civil War were essentially still intact when the United States again went to war in 1898 against Spain. The lessons learned from the Spanish-American War began a process that continued through the 20<sup>th</sup> century that focused on an operational logistics that rapidly moved forces and materiel within theater, which then allowed commanders to properly conduct tactical battles. In addition, logistic reforms began to provide a strategic capability to deploy forces worldwide and rapidly energize the United States industrial base to rapidly produce vast amounts of materiel and supplies relative to our enemies. The initiatives to give the U.S. Army superior operational and

strategic logistics continued through the 20<sup>th</sup> century and culminated with the U. S. Army's participation in Operation Desert Shield/Storm (ODS).

The lesson from ODS for the U.S. Army was that the mere movement of mass amounts of materiel and supplies was inefficient, costly and could impair future operations. The strategic capability to move the vast amount of materiel to the Saudi Arabian peninsula and then to move them over great distances within the Arabian peninsula validated the Army's strategic and operational logistic capacity. The problem with the system was apparent at the transition to the tactical logistic level where the visibility, distribution and transportation were inadequate to support the high technology systems employed in theater. Exacerbating the problem is that many high technology systems were often deployed in low numbers and to properly supply and maintain them required a disproportional number of personnel to manage the process.<sup>15</sup> A plethora of logistic initiatives have been proposed or implemented since ODS as a result of the lessons and also in response to the reducing defense budgets.

The changes in the conduct of warfare with highly precise weapons merged with timely and accurate information are reflected in the current U.S. Army logistic processes. The logistic reforms implemented since 1991 were predicted by Alvin and Heidi Toffler in their 1993 book, War and Anti-War: Survival at the Dawn of the 21<sup>st</sup> Century. Concerning weapon failures in third wave warfare, they were very prescient when they wrote, "The overall direction of change is clear and indisputable. The goal is finer and finer precision, more and more selectivity."<sup>16</sup> This concept is the underpinning of the programs that have been implemented during the past 10-15 years. Programs such as Total Asset Visibility, Prime Vendor Support, Sparing to Availability, Palletized Load System, Defense Transportation Tracking System, etc. have at their core, the ability to accurately deliver the needed supplies to the user at or before the needed time and accomplishing this within diminishing budgets.

Another trend in logistics since ODS has been the decisions to extensively use civilian contractors and methods to implement change. Many functions of supply and transportation have undergone wholesale conversion to contractor activities. During the 1990s, it was realized that many logistic functions, particularly at the strategic level, were analogous or identical to civilian processes and by leveraging the civilian infrastructure, logistic functions could be done cheaper by contracting civilian firms.

In 1996 a U.S. Army War College student, Mr. Douglas French wrote a Strategy Research Project and recommended that DoD, "...focus to contract out a broad array of logistic functions... [to include], depot level equipment maintenance and selected supply management functions."<sup>17</sup> Mr. French had three main conclusions in his project: 1) "Government at all levels

has benefited from the competition engendered by outsourcing any number of Government functions."<sup>18</sup> 2) "... [C]ontracting out...public managers should aggressively pursue all opportunities that exist."<sup>19</sup> 3) "Supply cataloging... has great potential for contracting out."<sup>20</sup> The underlying premise behind these conclusions forms the basis of this paper.

## THE BASIC PROBLEM

The problem manifests itself in four ways. First, General Shinseki has challenged the entire Army to transform into a lethal and highly deployable force. This transformation will compete with current systems' operational costs and will fail if ways are not found to shift funds to the force development required by the Army Transformation Campaign Plan. So it primarily comes down to dollars and the current systems need new ways to reduce their budget footprint so that future systems can be developed in a timely fashion.

Reducing the size of the logistic structure to support deployed systems has been highlighted by senior leaders<sup>21</sup> and is the second problem. The footprint logistical systems have on the battlefield and the large amount of support required by many systems makes a very lucrative target tactically and highly difficult to deploy either operationally or strategically. As General Shinseki wrote in the Army Vision Pamphlet:

"We will aggressively reduce our logistics footprint and replenishment demand. This will require us to control the numbers of vehicles we deploy, leverage reach back capabilities, invest in a systems approach to the weapons and equipment we design, and revolutionize the manner in which we transport and sustain our people and materiel."<sup>22</sup>

From his view a key enabler is the reduction of the footprint in theater and ensuring the Army tail does not keep the Army out of the fight when needed.

The third problem is the downsized Army and DoD workforces no longer allows for a workforce that can provide a robust logistic infrastructure. That infrastructure has been key in providing the skills, management and interface to ensure that the systems funding through different accounts has occurred and dollars were leveraged to support the system. Without the brute force of a large infrastructure the Army must rely on well-designed information connectivity, supporting policies, and proactive management to keep all the system and processes integrated. This remains a challenge for the Army.

The fourth problem is the dwindling industrial base to support our operations. As the Army and DoD have downsized and reduced the number of acquisition new starts, so to have industry downsized and reduced the number of engineers.<sup>23</sup> This has meant that the Army no

longer has the robust contractor base to work development issues and may not be timely to support urgent Army needs or at worst will not compete in the future for Army requirements.

## COSTS AND PROFIT OF NORMAL SUPPLY PROCUREMENTS

There are three primary motives underlying all contractors: 1) earn profit and/or money for their owner or stockholders; 2) increase market share; and 3) position for future business. The most powerful of those motives is the profit motive. Today the Army procures parts from vendors and provides a fee<sup>24</sup> normally as a fixed percentage of the number and cost of the item procured. This relationship is shown graphically at Figure 1.

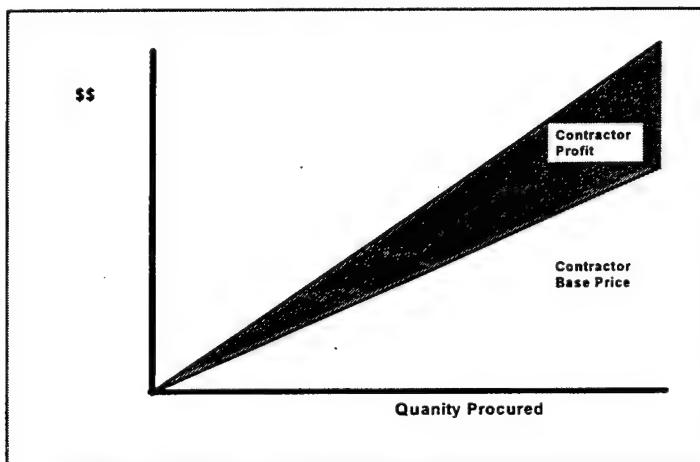


FIGURE 1 CONTRACTOR PROFIT ON QUANTITY BUYS

As Figure 1 shows the amount of profit the contractor earns is entirely dependant on the quantity of parts that the Army buys from him. This process discourages the contractor from making product reliability improvements when it affects his ability to earn the profit he gets from volume sales.

## CONTRACTED READINESS

The DoD and Army for most of its existence have employed the method of procuring and distributing parts for systems, as the units need them. This has meant that a very complex infrastructure of ordering, storing, transporting, managing, repairing, replacing, and distributing parts has been built over the years. Now as the environment of procuring systems, distributing the parts and the technology involved in the design and production of systems has changed, the Army must too look at new ways to support the systems. The Army has focused on improving logistics functions of ordering, storing, transporting, managing, repairing, replacing, and

distributing parts to support the fielded systems, but the focus should change to procuring/providing readiness of the fielded systems.

The concept of contracted readiness is simply allowing a contractor with intimate knowledge of the system to provide readiness to the field by the means that the contractor deems best. Of course there are considerations of the Army's unique environment which need to be taken into account. But fundamentally, the contractor has the option to enhance part/system reliability, provide larger stockpiles of spares, provide better distribution, etc. to accomplish the mission of keeping the systems combat ready.

The concept is shown graphically at Figure 2. The graph shows a notional system with the mean time between failures plotted versus the supply time. The operational availability of the system is plotted as the  $A_o$  line. The line  $A_o$  shows that as the system fails less, then re-supply time needed is very high. The requirement for any system can be calculated using this method and can provide the designer the critical point (point D) where the reliability can be traded versus the logistical capability needed to re-supply the system. When you start with any system at a point A the logistics community works very hard along the one dimension path A – B to better logically support the system. Likewise the technical community works very hard on the path A – C to make the system more reliable. Problems arise from the fact that the system does not have a common manager and these two processes are funded and worked

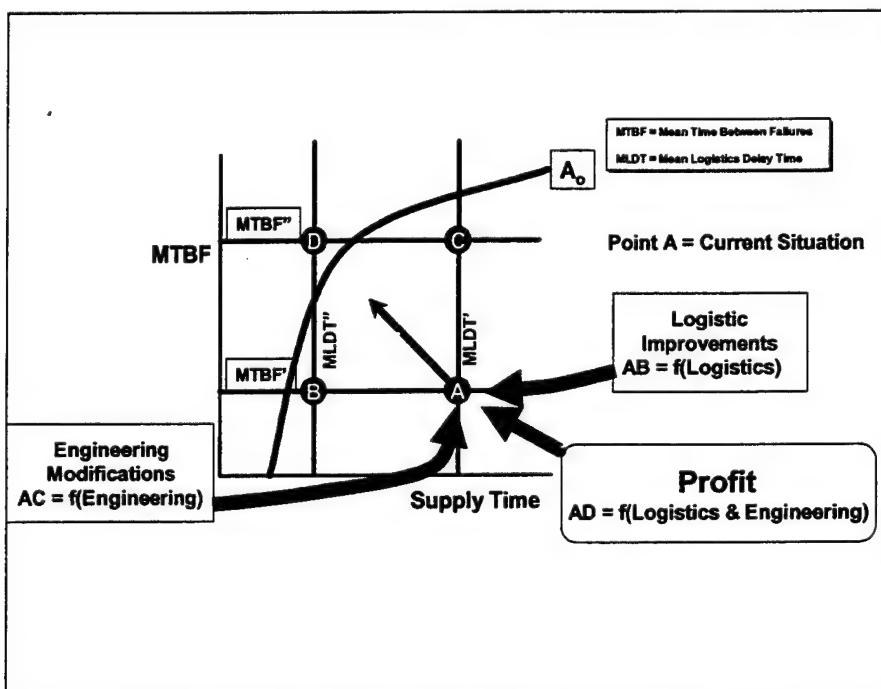


FIGURE 2 CONTRACTOR READINESS CONCEPTS

independent of each other. The line A – D though, shows a path conducted by one manager, in this case the contractor, and leads to the optimum point, D. The contractor continuously trades to get to point D by using his profit motive to continuously move in the direction of optimizing all logistics or engineering efforts to provide the required readiness to the system.

The assertion that the government can do this ignores the funding and management argument put forth earlier in this essay. But, in addition, a contractor's intimate knowledge of the system gives him the unique position to determine the best place to invest dollars to stay on the A – D line. To many it is counterintuitive that that a contractor can use profit to enhance our readiness, provide reliability improvements, and control Army the costs. This is the case and today the readiness and costs are less controllable by the Army than under the concept proposed here.

Using the concept of contracting for readiness and providing incentives to the contractor for readiness, one develops the graph at Figure 3 to pay and provide profit to the contractor. The shape and function of the curve are negotiated and depends on several factors that are discussed below. The curve is the contract value in dollars along the y-axis and the readiness function along the x-axis.

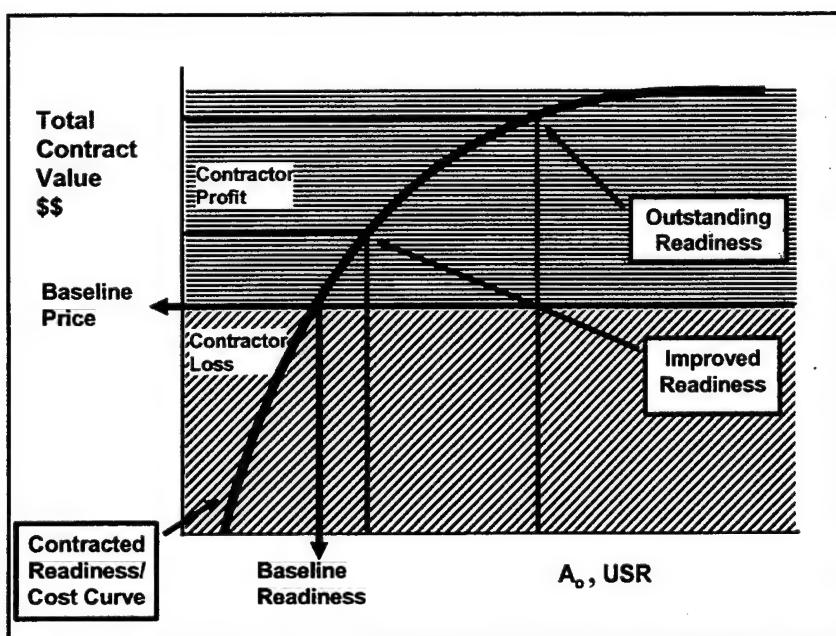


FIGURE 3 CONTRACT METHOD AND PAY FOR CONTRACTOR READINESS

The intent of the government in this contract is to achieve the required baseline readiness for the contracted system. The goal of the contractor is to get as high on the contract curve, thereby increasing profit, while simultaneous minimizing his cost exposure. The notable

difference from Figure 1 is the area below the baseline. In Figure 3, the contractor can lose money if he is unable to provide a minimum contractually agreed readiness posture (baselines readiness/baseline price point). Readiness that the contractor provides above the minimum is then rewarded with an increasing amount of profit.

The readiness that is contracted could be a measure of many different factors. The factors could be determined by the user based on the classical military considerations of Mission, Enemy, Time, Terrain, Troops, and Civilians (METT-TC). The readiness factors could also take into account system factors such as run-time, mileage, downtime, maintainability, reliability, etc., which have been designed to perform at a certain level. The factors could also take into account a combination of military considerations and system characteristics, and would best be determined by input from the users and developers when deciding the appropriate factors.

The factors chosen for the example depicted in Figure 3 uses the operational availability ( $A_o$ ) and the unit status reports (USR). The  $A_o$  is a measure of the total operational time divided by the total operational time plus the total down time and for this example could directly relate the system requirements that were design into the system. The USR provides the total operation time divided by the total time and here could show if the readiness was sufficient for the unit commander to conduct the mission. So in Figure 3 the system unique and METT-TR factors were considered.

## FUNDING PROCESSES

One impediment to implementation of a contractor readiness system is the way the Army manages the funding of procuring repair parts. Today when a unit has a broken part, they order a new one and using their Operations and Maintenance funds buy the part from the National Inventory Control Point (NICP). Simultaneously, they turn in the unserviceable (where applicable) and receive a credit based on the part condition and other factors. The NICP is responsible to fund their stockage of part by using the Army Working Capital Funds (AWCF).

AWCF is an account that has been set up to allow the funding of the wholesale level of logistics for parts, labor, maintenance, distribution and transportation. These funds are the primary source of funding for the Army Materiel Command (AMC) to include the Army's Depots. Similar accounts are used by the other services as well as by the Defense Logistic Agency to provide an account to fund their activities. AWCF is a revolving fund that allows AMC to withdraw funds to procure either stocks or labor with the expectation that the returns and demands for the field will replenish the fund as they pay for parts. The fund, since it is

analogous to an individual's credit card, is very carefully controlled and highly regulated to prevent potential mismanagement that would bankrupt the fund. This being the case, the fund has set up strict rules that require materiel and labor are bought in a direct exchange fashion. There can be no investment into future items that will payback in the coming years. The inability of the AWCF to invest in better quality parts for a payback over time is a fundamental reason that the A-D path described in Figure 2, could not be accomplished.

The concept of contracted readiness has at its essence the Army reaping the benefits of higher readiness by the contractor investing dollars to recoup profits in future years. This means that the funding of contracted readiness must be done by one office responsible for the program. The Operations and Maintenance funds normally allotted to the units must now be provided to the contracted readiness office to manage. This also means that all repair and service items normally funded by the unit will now be free issue and the contracted readiness office is responsible to ensure the proper funds are available to conduct these activities.

## **INTEGRATING CONTRACTED READINESS WITH UNITS**

Contracted readiness has some specific challenges in integrating with the logistic systems and units due to its novel approach to providing logistical support. The concept of how contracted readiness works with a unit is depicted in Figure 4. The key point when one looks at this system versus the current processes is they are very similar. The key to integration is synchronizing the level of readiness under contract with the contractor interface on the ground. For this example the interface is at the local Supply Support Activity (SSA) and any readiness shortcomings due to Army mismanagement would not be the responsibility of the contractor.

Interfacing properly is key to making it as transparent to the user as possible, so the requisition and receipt for parts is shown to be identical as it is in today's system. The unit requisitions through the currently fielded system and at the DAAS the request is sent directly through to the contractor for action. The contractor in this case acts as the NICP and when the request arrives the contractor takes the appropriate action to get the part back to the unit's SSA. Actions on how to deliver the part to the SSA are entirely the contractor's determination. The requisition is also monitored by the contract readiness office and will be part of the data to determine the contractor cost and fee as depicted in Figure 3.

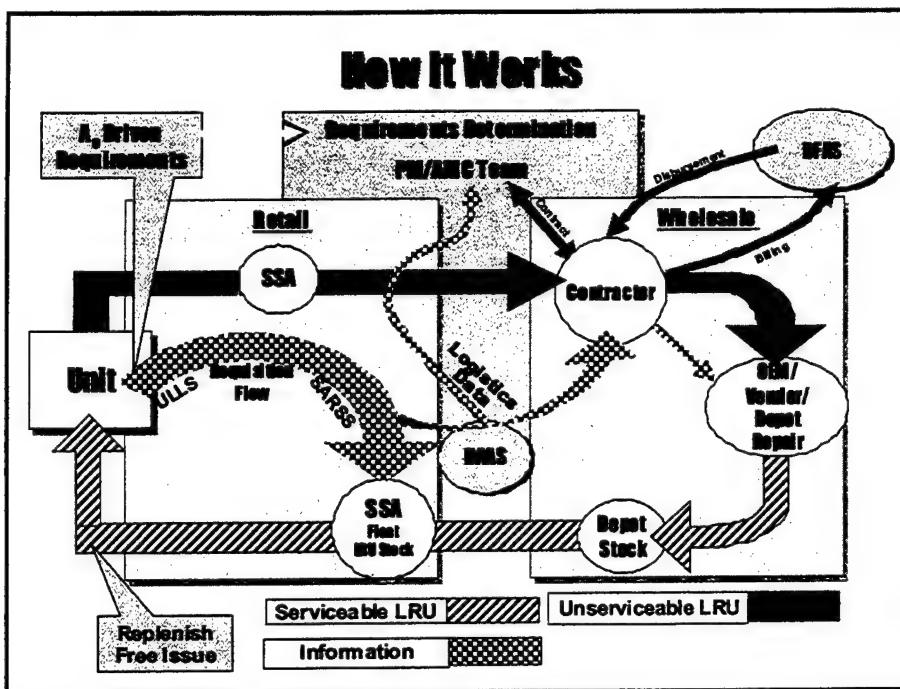


FIGURE 4 REQUISITIONS AND SUPPLY FLOW OF CONTRACTED READINESS.

The primary difference between the system outlined in Figure 4 and the current system is the financial transactions. The billing/disbursement loop between the contractor and Defense Finance and Account System (DFAS) is not a part of today's system. Today the unit buys the part from the NICP, which has purchased the part with AWCF and the NICP then reimburses AWCF. In this system the contractor is paid a set amount described in the contract and the process is accomplished via the direct billing to DFAS. The unit receives all their parts as free issue and receives no Operations and Maintenance funds to maintain their equipment.

## INDUSTRIAL BASE

A concern that has developed recently within DoD is the vitality of the industrial base. The industrial base has changed significantly since 1980 when there were greater than 50 contractors considered as prime vendors to provide government required products. Through a series of buyouts and mergers the number has now shrunk to 4 in 2002, these are Boeing, Lockheed - Martin, Raytheon, and Northup - Grumman. These firms each have more market share and business value than the next 5 corporations combined.<sup>25</sup>

The official position of the US government on the vitality of the US defense industrial base is stated on page 3 of the Annual Industrial Capabilities Report to Congress.

"The U.S. defense industrial base consolidation of the 1990s, viewed in context, has neither gone too far nor has it produced an industry in crisis. The U.S. defense industry continues to be the most technologically innovative, capable and responsive in the world."<sup>26</sup>

This is in contrast to two articles written for the National Defense:

"Industry consolidation has been a perilous endeavor for defense contractors in the United States. On average, shareholders have experienced poor returns during the past five years, partially as a result of the problems that have arisen as firms attempted to integrated acquisitions and rationalize operations."<sup>27</sup>

"For decades, we referred to the "defense-industrial complex" as if contractors were merely captive extensions of the Defense Department. It is clear, however, that last summer's Wall Street abandonment of traditional aerospace and defense stocks and the current debate over the potential cancellation of several high-visibility programs call for the creation of a new 'national-security business' model."<sup>28</sup>

Despite the differing views the industry has change dramatically, and its future stability is in the best interest of the United States.

Contracted readiness can provide stability by encouraging industry to have a vibrant intellectual base. The benefits of contracted readiness will provide employment opportunities in technology/engineering as well as business fields that can be professionally and financially rewarding, thereby attracting highly qualified workforce, reversing the trends that Messrs. Roberto and Skibbie wrote about in National Defense. This will then benefit the Army by having a highly qualified workforce available to develop and produce the Army Objective Force.

Contracted readiness provides all the funding, configuration control, commodity control, inventory control, reliability and improvements all within the control of a single manager. The manager of the system then contracts his specifications to a contractor with a long-term commitment and the contractor is then responsible for the readiness of the system. The concept is the contractor invests in new technologies, both for increased capability and manufacturing techniques, to avoid replacing parts and making the costs of readiness to profit of readiness.

This process loads the industrial base by investing in these new technologies, thereby loading the intellectual base. While some efficiency will be realized through improved logistic processes, the large gains will be garnered through the development of more durable systems and parts. The natural incentive to the contractor will be to harvest those profits and he can best do that through the use of a strong engineering effort that subsequently designs parts that last much longer than before.

The shrinking military industrial base has posed challenges for the US military planning for future development of combat capable forces. The concern for the intellectual capital of military industrial base increases as the competition with commercial firms for top-notch people increases and military business decreases. Contracted readiness is a method to both provide the Army high states of system readiness and load the industrial base with business. The contractor will require highly skilled engineers to make large profits and a vibrant work environment will attract highly motivated engineers.

## **MEETING THE DOD VISION**

The FY2000 DoD Logistics Strategic Plan spells out several critical success indicators for DoD logistic programs. It identifies those areas that logisticians should target for "reengineering and management focus."<sup>29</sup> The 5 indicators are listed below:

1. Optimize cycle times -- acquisition, supply, maintenance, transportation, and distribution.
2. Manage the total life cycle through integration of acquisition and logistics process.
3. Meet deployment and sustainment requirements across the full spectrum of military operations.
4. Guarantee joint total asset visibility through fully integrated, secure information systems.
5. Meet or exceed DoD logistics metrics and cost reduction goals.<sup>30</sup>

When evaluating these indicators, numbers one through four are enablers to achieve the goal which is the fifth indicator. The fifth indicator is embodied in the first objective and its metric of, "Optimize support to the Warfighter. The Military Components will determine their existing aggregate Mission Capable (MC) rates and establish appropriate goals for higher aggregate MC rates within specified time frames."<sup>31</sup>

Contractor readiness primary goals are to reduce cost while providing the highest readiness states feasible. To that end programs that will be describe in the next section have estimated between twenty to forty percent cost reduction while maintaining the readiness of their system at or above the current standard. The description of this critical success indicator and the premise of contracted readiness are entirely synchronized.

## **IMPLEMENTATION IN TWO PROGRAMS**

To date, there are two programs which have been approved as pilot programs for implementation of a similar concept. The Sentinel radar system and the Improved Tow Acquisition System (ITAS) have been approved within the past year to begin pilot programs for the Army to determine the feasibility of providing life cycle support through contracted readiness, to determine if the fundamental concepts prove correct, and to see if this concept can be expanded to other programs. The concept and implementation of these programs was primarily a derivative of the proposed, but unsuccessful Apache Prime Vendor Support program.

The ITAS system uses a second generation, forward-looking infrared (FLIR) night vision sight with an integrated day sight. The detection and recognition performance of this integrated sight is over two times the current TOW 2 system capability. ITAS incorporates an eye-safe laser range finder, modular design for ease of maintenance/modernization and internal built-in test/built-in test equipment (BIT/BITE). As a result of the ITAS design, the system has a significant reduction in prime and ancillary equipment necessary to fight and maintain the systems. ITAS also has an embedded training capability.<sup>32</sup>

The contracted logistic system that ITAS is implementing was approved in fiscal year 2001 as a pilot. The ITAS program is call Contractor Logistic Support (CLS) and incorporates all the main tenets previously described. The program's key points are a contractor responsible for configuration and commodity management of the ITAS system and parts; repair parts are free issue to the field; the contractor is responsible by contract for fleet readiness; the contract is designed for both positive and negative incentive based on a negotiated fleet readiness requirement; financial transactions are completed outside the AWCF system; and the contract management is controlled by a single Army manager, the Product Manager.<sup>33</sup>

ITAS implementation and approval was based on a few key estimates. First the validated cost estimate showed a \$300 million dollar saving over 20 years.<sup>34</sup> The second key factor was the demonstrated readiness rates. The program office conducted user testing of the concept with the 82<sup>nd</sup> Airborne Division and showed a ninety eight percent readiness rate during the demonstration.<sup>35</sup>

The Sentinel is a radar system developed for use by deployed Army division and corps formations. It is trailer mounted and is towed by the High Mobility Multipurpose Wheeled Vehicle (HMMWV). Sentinel accomplishes its primary mission by providing key target data to Short Range Air Defense (SHORAD) weapon systems and battlefield commanders via the FAAD C2 data link or directly from the Sentinel, using Enhanced Position Location Reporting

System (EPLRS) or Single Channel Ground and Airborne Radio System (SINCGARS) data radios.<sup>36</sup>

The Sentinel contracted logistic program is called Contractor Delivery System (CDS). CDS tenets are very similar to the ITAS CLS. CDS has unified configuration and commodity management by a contractor; the contractor is responsible by contract for the fleet readiness; the contractor can determine the best method to improve readiness; the contract is design with both positive and negative incentives based on the negotiated fleet readiness requirements; CDS issues the parts free to the units; financial transactions outside the AWCF; and a single Army manager of the program, the Product Manager.<sup>37</sup>

The main reason the program was approved was based on cost saving and the potential for improved performance over other programs. The validated cost estimate for the CDS program showed a cost saving over the baseline of \$302 million for the 30 year projected life for the program. The cost estimates of the baseline, traditional depot support program and the CDS program are shown in Figure 5

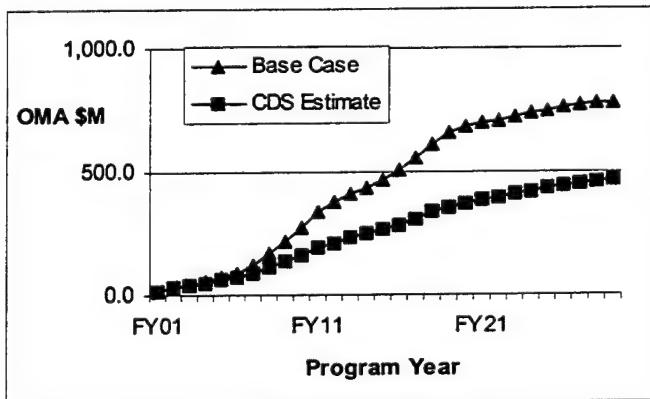


FIGURE 5 . CDS VERSUS BASE CASE (STANDARD DOD LOGISTIC PRACTICES) PROGRAM<sup>38</sup>

The only difference between the two programs is the ITAS CLS has contractors co-located with the deployed units. The Sentinel program relies on the organizational maintenance and then evacuating the item back to the contractor facility. The ITAS CLS will have contractor representative near to the vicinity of the unit and he is responsible for evacuating the item back to the contractor facility.

Both programs are pilot programs to determine if the estimates in both costs and readiness are realized. The programs will be evaluated during the next several years to determine if the concept is viable and the costs and readiness goals are materialize. If the

estimates are realized, the CLS and CDS programs will be approved for full life cycle support. Moreover, the program's concepts will be analyzed for implementation in many Army systems.

## **CONCLUSION**

The Army and DoD require sound and efficient management of the limited dollars provided to accomplish all DoD needs. The programs and budgets have been severely under funded for many years and are predicted to remain so for the near future. A way for the Army to resolve the funding short falls is to execute innovative and efficient programs to reduce the cost of operating the Army.

A logistic system that can reduce the cost of the Army is the contracted readiness concept. The concept will reduce Army operating costs by providing incentives to contractors to reduce the cost of operating systems while simultaneously increasing the readiness of the fleet. The program also places the challenge of managing the configuration and the commodity of a system under one entity.

Two programs have been approved for implementing similar concepts. The Sentinel and ITAS systems success or failure will determine if this concept is viable and if they should be continued in those programs. Moreover, it will demonstrate if similar concepts should be developed for new systems designed for the Objective Force.

Word count = 6176



## ENDNOTES

<sup>1</sup> Defense Logistics Agency, "DLA Hammer Awards," available from <<http://www.dla.mil/dss/dss-p/webaward.htm#TOP>>; Internet; accessed 1 April 2002. This website shows where all of Vice-President Gore's Re-inventing Government Hammer Awards were won by Defense Logistics Agency and the cumulative affect has been the reduction of mean logistic delay time from 36 days in 1994 to a current value of 15 days.

<sup>2</sup> Daniel Goure and Jeffrey M. Ranney, Averting the Budget Train Wreck in the New Millennium (Washington D.C.: Center for Strategic and International Studies, 1999), 124-131.

<sup>3</sup> Ibid., 122.

<sup>4</sup> Ibid., 121.

<sup>5</sup> William S. Cohen, Report of the Quadrennial Defense Review, (Washington, D.C.: Department of Defense, May 1997), 41-47.

<sup>6</sup> Donald H. Rumsfeld, Quadrennial Defense Review Report, (Washington, D.C.: Department of Defense, September 2001), 30.

<sup>7</sup> Ibid., 41-46

<sup>8</sup> Eric K. Shinseki, "Testimony to The Committee On Appropriations Subcommittee On Defense, U.S. Senate Second Session, 106th Congress," 25 April 2000; available from <<http://www.army.mil/leaders/CSA/testimony.htm>>; Internet; accessed 1 April 2002.

<sup>9</sup> I did not consider the military construction accounts in this discussion even though they are undoubtedly a part of the life cycle cost. These costs are normally small relative to the other accounts or unseen due to re-capitalization of current facilities for use with the new system.

<sup>10</sup> This assumes the system goes through a complete life span (minimum of 20 years) and is not prematurely ended. It also assumes that the system is not a one-item system, such as a satellite but produced in significant quantities to field the entire force.

<sup>11</sup> The total ownership cost of all system is now an integral part of all product, project and program managers and is also spelled out in the Program Executive Officer's charter.

<sup>12</sup> James A Huston, The Sinews of War: Army Logistics 1775-1953 (Washington: U.S. Department of the Army, Office of the Chief of Military History, 1966), 65.

<sup>13</sup> Ibid., 113.

<sup>14</sup> Ibid., 175.

<sup>15</sup> The author was assigned to 22d Support Command during Operation Desert Storm as a member of an Army Material Command organization that numbered about 30 people, whose main purpose was to ensure that repair parts coming from CONUS were received and sent forward to the needed unit.

<sup>16</sup> Alvin Toffler and Heidi Toffler, War and Anti-War: Survival at the Dawn of the Twenty-First Century, (Toronto, Canada: Little, Brown and Company, 1993), 72.

<sup>17</sup> Douglas J. French, Contracting Out Wholesale Logistics: A Supply Cataloging Case Study. Strategy Research Project (Carlisle Barracks: U.S. Army War College, 17 April 1996), 24.

<sup>18</sup> Ibid., 20.

<sup>19</sup> Ibid., 22.

<sup>20</sup> Ibid., 22.

<sup>21</sup> Eric K. Shinseki, "Address to the Eisenhower Luncheon, 45<sup>th</sup> Annual Meeting of the AUSA," 12 October 1999; available from <<http://www.army.mil/leaders/CSA/speeches.htm>>; Internet; accessed 1 April 2002.

<sup>22</sup> U.S. Department of the Army, The Army Vision, Army Vision Pamphlet (Washington, D.C.: U.S. Department of the Army, October 1999), 6.

<sup>23</sup> The ideas in this paragraph are based on remarks made by a speaker participating in the Commandant's Lecture Series.

<sup>24</sup> Fee in government contracts is analogous to profit in the civilian world.

<sup>25</sup> Bob Magee, "Industrial Policy," briefing slides, Carlisle Barracks, U.S. Army War College, 28 January 2002. The data came from chart number 8, which showed the dollar values of the top 16 US defense firms in 1999. The data showed General Dynamics ship building separately, which was bought by Northup Grumman the next year.

<sup>26</sup> Jeffrey Bialos, Annual Industrial Capabilities Report to Congress, (Washington, D.C.: U.S. Department of Defense, January 2001), 3.

<sup>27</sup> Michael A Roberto, "Defense Consolidation Has Disappointed Shareholders," National Defense 86 (October 2000): 36.

<sup>28</sup> Larry Skibbie, "Defense Secretary Says, Industrial Base Decline Is 'A Serious Problem,'" National Defense 87 (May 2001): 1.

<sup>29</sup> U.S. Department of Defense, 21<sup>st</sup> Century Logistics, DoD Logistics Strategic Plan (Washington D.C.: Department of Defense, August 1999), 13.

<sup>30</sup> Ibid.

<sup>31</sup> Ibid., 15.

<sup>32</sup> Amy Barnett <[Amy.Barnett@msl.redstone.army.mil](mailto:Amy.Barnett@msl.redstone.army.mil)>, "Synopsis of Improved Target Acquisition System (ITAS), Contractor Logistics Support," electronic mail message to Lloyd McDaniels <[lloyd.mcdaniels@carlisle.army.mil](mailto:lloyd.mcdaniels@carlisle.army.mil)>, 25 February 2001.

<sup>33</sup> Amy Barnett, "Improved Target Acquisition System (ITAS), Contractor Logistics Support" briefing slides, Program Executive Office Tactical Missiles, 20 February 2001.

<sup>34</sup> Amy Barnett. <Amy.Barnett@msl.redstone.army.mil>, "Synopsis of Improved Target Acquisition System (ITAS), Contractor Logistics Support," electronic mail message to Lloyd McDaniels <lloyd.mcdaniels@carlisle.army.mil>, 25 February 2001.

<sup>35</sup> Amy Barnett "Improved Target Acquisition System (ITAS), Contractor Logistics Support," briefing slides, Redstone Arsenal, Program Executive Office Tactical Missiles, 20 February 2001.

<sup>36</sup> U.S. Department of the Army, Weapon System, (Washington, D.C: U.S. Department of the Army, 2001), 147.

<sup>37</sup> Lloyd McDaniels, "Sentinel CDS Executive Brief," briefing slides, Redstone Arsenal, U.S. Army Aviation and Missile Command, 10 April 2001.

<sup>38</sup> Ibid., slide 9.



## BIBLIOGRAPHY

- Barnett, Amy <Amy.Barnett@msl.redstone.army.mil>. "Synopsis of Improved Target Acquisition System (ITAS), Contractor Logistics Support." Electronic mail message to Lloyd McDaniels <lloyd.mcdaniels@carlisle.army.mil>. 25 February 2001.
- Barnett, Amy. "Improved Target Acquisition System (ITAS), Contractor Logistics Support." Briefing slides. Redstone Arsenal: Program Executive Office Tactical Missiles, 20 February 2001.
- Bialos, Jeffrey. Annual Industrial Capabilities Report to Congress. Washington, D.C.: Department of Defense, January 2001.
- Cohen, William S. Report of the Quadrennial Defense Review. Washington, D.C.: Department of Defense, May 1997.
- Defense Logistics Agency. "DLA Hammer Awards." Available from <<http://www.dla.mil/dss/dssp/webaward.htm#TOP>>. Internet. Accessed 1 April 2002.
- French Douglas J. Contracting Out Wholesale Logistics: A Supply Cataloging Case Study. Strategy Research Project. Carlisle Barracks: U.S. Army War College, 17 April 1996.
- Goure, Daniel, and Jeffrey M. Ranney. Averting the Budget Train Wreck in the New Millennium. Washington D.C.: Center for Strategic and International Studies, 1999.
- Huston, James A. The Sinews of War: Army Logistics 1775-1953. Washington D.C.: U.S. Department of the Army, Office of the Chief of Military History, 1966.
- Magee Bob, "Industrial Policy." Briefing slides. Carlisle Barracks: U.S. Army War College, 28 January 2002.
- McDaniels, Lloyd. "Sentinel CDS Executive Brief." Briefing slides. Redstone Arsenal: U.S. Army Aviation and Missile Command, 10 April 2001.
- Roberto, Michael A. "Defense Consolidation Has Disappointed Shareholders." National Defense 86 (October 2000): 36.
- Rumsfeld, Donald H. Quadrennial Defense Review Report. Washington, D.C.: U.S. Department of Defense, September 2001.
- Shinseki Eric K. "Testimony to The Committee On Appropriations Subcommittee On Defense, U.S. Senate Second Session, 106th Congress." 25 April 2000. Available from <<http://www.army.mil/leaders/CSA/testimony.htm>>. Internet. Accessed 1 April 2002.
- Shinseki Eric K. "Address to the Eisenhower Luncheon, 45th Annual Meeting of the AUSA." 12 October 1999. Available from <<http://www.army.mil/leaders/CSA/speeches.htm>>. Internet. Accessed 1 April 2002.
- Skibbie, Larry. "Defense Secretary Says, Industrial Base Decline Is 'A Serious Problem,'" National Defense 87 (May 2001): 1.

Toffler, Alvin, and Heidi Toffler. War and Anti-War: Survival at the Dawn of the Twenty-First Century. Toronto, Canada: Little, Brown and Company, 1993.

U.S. Department of the Army. The Army Vision. Army Vision Pamphlet. Washington, D.C.: U.S. Department of the Army, October 1999.

U.S. Department of the Army. Weapon System. Washington, D.C.: U.S. Department of the Army, 2001.

U.S. Department of Defense. 21st Century Logistics. DoD Logistic Strategic Plan. Washington D.C.: U.S. Department of Defense, August 1999.